REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Redraw with changes. Converted drawing to one part-one number SMD format. Added package, outline letters Z and U. Added devices 03 and 04.	93-09-14	Michael A. Frye
B	Added case outline T. Made format changes, editorial changes throughout	93-11-19	Michael A. Frye
C	Added case outlines M, N, and 9. Editorial changes throughout.	94-06-06	Michael A. Frye
D	Changes in accordance with NOR 5962-R008-96.	95-11-03	Michael A. Frye
E	Changes in accordance with NOR 5962-R004-97.	96-10-04	Ray Monnin
F	Update drawing to current requirements. Editorial changes throughout. - gap	02-02-01	Ray Monnin

REV																				
SHEET																				
REV	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
SHEET	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34

REV STATUS	REV	F	F	F	F	F	F	F	F	F	F	F	F	F
OF SHEETS	SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14

PMIC N/A

PREPARED BY
Kenneth Rice

DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OHIO 43216
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STANDARD MICROCIRCUIT DRAWING

THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE

AMSC N/A

CHECKED BY
Rajesh Pithadia

APPROVED BY
Michael A. Frye

DRAWING APPROVAL DATE
92-07-29

MICROCIRCUIT, MEMORY, DIGITAL, CMOS 2000 GATE, PROGRAMMABLE LOGIC ARRAY, MONOLITHIC SILICON

REVISION LEVEL	SIZE	CAGE CODE	
F	A	**67268**	**5962-89948**

SHEET 1 OF 34

DSCC FORM 2233
APR 97

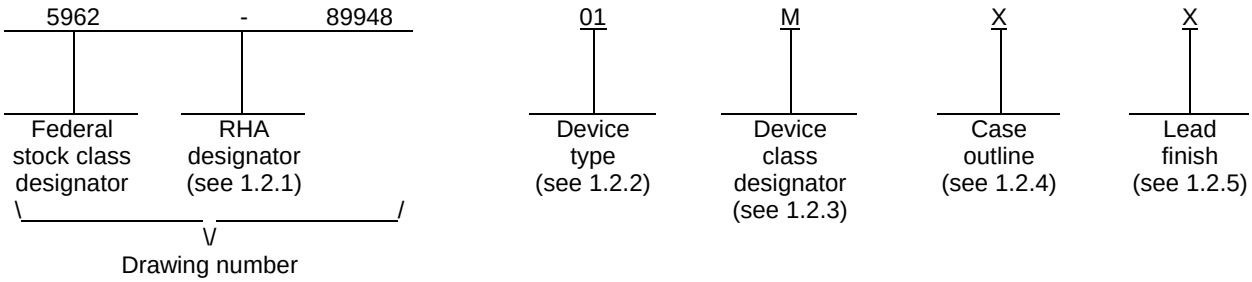
5962-E158-02

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1. SCOPE

1.1 Scope. This drawing documents two product assurance class levels consisting of high reliability (device classes Q and M) and space application (device class V). A choice of case outlines and lead finishes are available and are reflected in the Part or Identifying Number (PIN). When available, a choice of Radiation Hardness Assurance (RHA) levels are reflected in the PIN.

1.2 PIN. The PIN is as shown in the following example:



1.2.1 RHA designator. Device classes Q and V RHA marked devices meet the MIL-PRF-38535 specified RHA levels and are marked with the appropriate RHA designator. Device class M RHA marked devices meet the MIL-PRF-38535, appendix A specified RHA levels and are marked with the appropriate RHA designator. A dash (-) indicates a non-RHA device.

1.2.2 Device type(s). The device type(s) identify the circuit function as follows:

Device type	Generic number	Circuit function	Toggle Speed
01	3020-50	8 x 8 2000 gate programmable array	50 MHz
02	3020-70	8 x 8 2000 gate programmable array	70 MHz
03	3020-100	8 x 8 2000 gate programmable array	100 MHz
04	3020-125	8 x 8 2000 gate programmable array	125 MHz

1.2.3 Device class designator. The device class designator is a single letter identifying the product assurance level as follows:

Device class	Device requirements documentation
M	Vendor self-certification to the requirements for MIL-STD-883 compliant, non-JAN class level B microcircuits in accordance with MIL-PRF-38535, appendix A
Q or V	Certification and qualification to MIL-PRF-38535

1.2.4 Case outline(s). The case outline(s) are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Package style
X	CMGA15-PN	84 1/	Pin grid array package
Y	See figure 1	100	Quad flat package
Z	CMGA3-PN	84 1/	Pin grid array package
U	CQCC1-F100	100	Unformed-lead chip carrier 2/
T	See figure 1	100	Quad flat package
M	See figure 1	100	Quad flat package
N	See figure 1	100	Quad flat package
9	See figure 1	100	Quad flat package

1.2.5 Lead finish. The lead finish is as specified in MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

1/ 84 = actual number of pins used, not maximum listed in MIL-STD-1835.
2/ Pin 1 is the middle pin on the side with center justified identifier mark. Mark may be a notch, dot, or triangle.

1.3 Absolute maximum ratings. 3/

Supply voltage range to ground potential (V_{CC})	-0.5 V dc to +7.0 V dc
DC input voltage range	-0.5 V dc to V_{CC} +0.5 V dc
Voltage applied to three-state output (V_{TS})	-0.5 V dc to V_{CC} +0.5 V dc
Lead temperature (soldering, 10 seconds)	+260°C
Thermal resistance, junction-to-case (θ_{JC}):	
Case outline X, Z, and U	See MIL-STD-1835
Case outlines Y, T, M, N, and 9	10°C/W 4/
Junction temperature (T_J)	+150°C 5/
Storage temperature range	-65°C to +150°C

1.5 Digital logic testing for device classes Q and V.

Fault coverage measurement of manufacturing logic tests in accordance with MIL-PRF-38535	95 percent

1.4 Recommended operating conditions. 6/

Case operating temperature range (T_C)	-55°C to +125°C
Supply voltage relative to ground (V_{CC})	+4.5 V dc minimum to +5.5 V dc maximum
Ground voltage (GND) or (V_{SS})	0 V dc

2. APPLICABLE DOCUMENTS

2.1 Government specification, standards, and handbooks. The following specification, standards, and handbooks form a part of this drawing to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-PRF-38535 - Integrated Circuits, Manufacturing, General Specification for.

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-883 - Test Method Standard Microcircuits.
MIL-STD-1835 - Interface Standard Electronic Component Case Outlines.

HANDBOOKS

DEPARTMENT OF DEFENSE

MIL-HDBK-103 - List of Standard Microcircuit Drawings.
MIL-HDBK-780 - Standard Microcircuit Drawings.

(Unless otherwise indicated, copies of the specification, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

3/ Stresses above the absolute maximum rating may cause permanent damage to the device. Extended operation at the maximum levels may degrade performance and affect reliability.
4/ When a thermal resistance for this case is specified in MIL-STD-1835 that value shall supersede the value indicated herein.
5/ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening conditions in accordance with method 5004 of MIL-STD-883.
6/ All voltage values in this drawing are with respect to V_{SS}.

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

JESD 78 - IC Latch-Up Test.

(Application for copies should be addressed to the Electronic Industries Alliance, 2500 Wilson Boulevard, Arlington, VA 22201-3834.)

2.3 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements for device classes Q and V shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein. The individual item requirements for device class M shall be in accordance with MIL-PRF-38535, appendix A for non-JAN class level B devices and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein for device classes Q and V or MIL-PRF-38535, appendix A and herein for device class M.

3.2.1 Case outlines. The case outlines shall be in accordance with 1.2.4 herein and figure 1.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 2.

3.2.3 Logic block diagram. The logic block diagram shall be as specified on figure 3.

3.3 Electrical performance characteristics and postirradiation parameter limits. Unless otherwise specified herein, the electrical performance characteristics and postirradiation parameter limits are as specified in table I and shall apply over the full case operating temperature range.

3.4 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table IIA. The electrical tests for each subgroup are defined in table I.

3.5 Marking. The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked as listed in MIL-HDBK-103. For packages where marking of the entire SMD PIN number is not feasible due to space limitations, the manufacturer has the option of not marking the "5962-" on the device. For RHA product using this option, the RHA designator shall still be marked. Marking for device classes Q and V shall be in accordance with MIL-PRF-38535. Marking for device class M shall be in accordance with MIL-PRF-38535, appendix A.

3.5.1 Certification/compliance mark. The certification mark for device classes Q and V shall be a "QML" or "Q" as required in MIL-PRF-38535. The compliance mark for device class M shall be a "C" as required in MIL-PRF-38535, appendix A.

3.6 Certificate of compliance. For device classes Q and V, a certificate of compliance shall be required from a QML-38535 listed manufacturer in order to supply to the requirements of this drawing (see 6.7.1 herein). For device class M, a certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in MIL-HDBK-103 (see 6.7.2 herein). The certificate of compliance submitted to DSCC-VA prior to listing as an approved source of supply for this drawing shall affirm that the manufacturer's product meets, for device classes Q and V, the requirements of MIL-PRF-38535 and herein or for device class M, the requirements of MIL-PRF-38535, appendix A and herein.

3.7 Certificate of conformance. A certificate of conformance as required for device classes Q and V in MIL-PRF-38535 or for device class M in MIL-PRF-38535, appendix A shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Notification of change for device class M. For device class M, notification to DSCC-VA of change of product (see 6.2 herein) involving devices acquired to this drawing is required for any change as defined in MIL-PRF-38535, appendix A.

3.9 Verification and review for device class M. For device class M, DSCC, DSCC's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

3.10 Microcircuit group assignment for device class M. Device class M devices covered by this drawing shall be in microcircuit group number 42 (see MIL-PRF-38535, appendix A).

3.11 Operational notes. Additional information shall be provided by the device manufacturer (see 6.6 herein).

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. For device classes Q and V, sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein. For device class M, sampling and inspection procedures shall be in accordance with MIL-PRF-38535, appendix A.

4.2 Screening. For device classes Q and V, screening shall be in accordance with MIL-PRF-38535, and shall be conducted on all devices prior to qualification and technology conformance inspection. For device class M, screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection.

4.2.1 Additional criteria for device class M.

a. Delete the sequence specified as initial (pre-burn-in) electrical parameters through interim (post-burn-in) electrical parameters of method 5004 and substitute lines 1 through 6 of table IIA herein.

b. Burn-in test, method 1015 of MIL-STD-883.

(1) The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing or acquiring activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015.

(2) T_A = +125°C, minimum.

c. Interim and final electrical test parameters shall be as specified in table IIA herein.

4.2.2 Additional criteria for device classes Q and V.

a. The burn-in test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document revision level control of the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.

b. Interim and final electrical test parameters shall be as specified in table IIA herein.

c. Additional screening for device class V beyond the requirements of device class Q shall be as specified in MIL-PRF-38535, appendix B.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $4.5\ V \le V_{CC} \le 5.5\ V$ $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
High level output voltage	V_{OH}	V_{CC} = 4.5 V, V_{IL} = 0.8 V, I_{OH} = -4.0 mA, V_{IH} = 2.0 V	1, 2, 3	All	3.7		V
		V_{CC} = 4.5 V and 5.5 V, V_{IL} = 0.9 V and 1.1 V, V_{IH} = 3.15 V and 3.85 V, I_{OH} = -4.0 mA					
Low level output voltage	V_{OL}	V_{CC} = 5.5 V, V_{IL} = 0.8 V, I_{OL} = 4.0 mA, V_{IH} = 2.0 V	1, 2, 3	All		0.4	V
		V_{CC} = 4.5 V and 5.5 V, V_{IL} = 0.9 V and 1.1 V, V_{IH} = 3.15 V and 3.85 V, I_{OL} = 4.0 mA					
Operating power supply current	I_{CC}	V_{CC} = 5.5 V 1/	1, 2, 3	01		245	mA
				02		250	
				03		260	
				04		270	
Quiescent power supply current	I_{CCO}	CMOS inputs, $V_{CC} = V_{IN}$ = 5.5 V	1, 2, 3	All		1.0	mA
Quiescent power supply current	I_{CCO}	TTL inputs, $V_{CC} = V_{IN}$ = 5.5 V	1, 2, 3	All		15	mA
Power-down supply current	I_{CCPD}	$\overline{PWRDWN}$ = 0 v $V_{CC} = V_{IN}$ = 5.5 V	1, 2, 3	All		0.5	µA
Input leakage current	I_{IL}	V_{CC} = 5.5 V, V_{IN} = 0 V and 5.5 V	1, 2, 3	All	-20	20	µA
Output leakage current	I_{OL}	V_{CC} = 5.5 V, V_{IN} = 0 V and 5.5 V	1, 2, 3	All	-20	20	µA
Horizontal long line, pull-up current	I_{RLL}	V_{CC} = 5.5 V, V_{IN} = 0 V and 5.5 V	1, 2, 3	All		2.5	mA

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $4.5\ V \le V_{CC} \le 5.5\ V$ $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
High level input voltage	V_{IHT}	TTL inputs	1, 2, 3	All	2.0		V
Low level input voltage	V_{ILT}	TTL inputs	1, 2, 3	All		0.8	V
High level input voltage	V_{IHC}	CMOS inputs	1, 2, 3	All	0.7 V_{CC}		V
Low level input voltage	V_{ILC}	CMOS inputs	1, 2, 3	All		0.2 V_{CC}	V
Power down ($\overline{PWRDWN}$) voltage 2/	V_{PD}		1, 2, 3	All	3.5		V
Input capacitance except XTL1 and XTL2	C_{IN}	See 4.4.1e	4	All		10	pF
Input capacitance XTL1 and XTL2	C_{IN}	See 4.4.1e	4	All		15	pF
Output capacitance	C_{OUT}	See 4.4.1e	4	All		10	pF
Functional test		See 4.4.1c	7, 8A, 8B	All			
Interconnect + t_{PID} + $8(t_{ILO})$ + t_{OP}	t_{B1}	Measured on 8 columns	9, 10, 11	01		136	ns
				02		87	
				03		66	
				04		52	
t_{CKO} + t_{ICK} + t_{CKI} + interconnect	t_{B2}	Tested on all CLB's	9, 10, 11	01		32	ns
				02		21	
				03		18	
				04		15	
Interconnect + t_{CKO} + t_{QLD} + t_{ILO} + t_{DICK}	t_{B3}	Tested on all CLB's	9, 10, 11	01		53	ns
				02		34	
				03		26	
				04		22	
t_{ILO} + t_{ECCK} + interconnect	t_{B4}	Tested on all CLB's	9, 10, 11	01		35	ns
				02		23	
				03		18	
				04		15	

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $4.5\ V \le V_{CC} \le 5.5\ V$ $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
$t_{OKPO} + t_{OPS} - t_{OPF} + t_{PICK}$	t_{B5}	Tested on all CLB's	9, 10, 11	01		73	ns
				02		53	
				03		44	
				04		40	
Interconnect + $t_{CKO} + t_{QLO} + t_{PUS} + t_{ICK}$	t_{B6}	One long line pull-up	9, 10, 11	01		73	ns
				02		48	
				03		34	
				04		30	
Interconnect + $t_{CKO} + t_{QLO} + t_{PUS} + t_{ICK}$	t_{B7}	Other long line pull-up	9, 10, 11	01		83	ns
				02		55	
				03		41	
				04		35	
Interconnect + $t_{CKO} + t_{QLO} + t_{IO} + t_{ICK}$	t_{B8}	No pull-up, lower long line	9, 10, 11	01		47	ns
				02		31	
				03		24	
				04		21	
Interconnect + $t_{CKO} + t_{QLO} + t_{ICK} + t_{IO}$	t_{B9}	No pull-up, upper long lines	9, 10, 11	01		57	ns
				02		38	
				03		31	
				04		26	
Logic input to output (combinatorial)	t_{ILO}	See figure 4	3/	01		14	ns
				02		9	
				03		7	
				04		5.5	
Reset input to output	t_{RIO}		3/	01		15	ns
				02		8	
				03		7	
				04		6	
Reset direct width	t_{RPW}		3/	01	12		ns
				02	8		
				03	7		
				04	6		

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions 4.5 V ≤ V_{CC} ≤ 5.5 V -55°C ≤ T_C ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Master reset pin to CLB output (X and Y)	t_{MRQ}	See figure 4	3/	01		40	ns
				02		34	
				03		19	
				04		17	
K clock input to CLB output	t_{CKO}		3/	01		12	ns
				02		8	
				03		6	
				04		5	
Clock K to outputs X or Y when Q is returned thru function generators F or G to drive X or Y	t_{QLO}		3/	01		25	ns
				02		13	
				03		10	
				04		8	
K clock logic-input setup	t_{ICK}		3/	01	12		ns
				02	8		
				03	7		
				04	5.5		
K clock logic-input hold	t_{CKI}		3/	All	1		ns
Logic input setup to K clock	t_{DICK}		3/	01	8		ns
				02	5		
				03	4		
				04	3		
Logic input hold from K clock	t_{CKDI}		3/	01	6		ns
				02	4		
				03	2		
				04	1.5		

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $4.5\ V \le V_{CC} \le 5.5\ V$ $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Logic input setup to enable clock	t_{ECCK}	See figure 4	3/	01	10		ns
				02	7		
				03	5		
				04	4.5		
Logic input hold to enable clock	t_{CKEC}		3/	All	2.5		ns
Clock (high) 4/	t_{CH}		3/	01	9		ns
				02	5		
				03	4		
				04	3		
Clock (low) 4/	t_{CL}		3/	01	9		ns
				02	7		
				03	4		
				04	3		
Pad (package pin) to input direct	t_{PID}		3/	01		10	ns
				02		6	
				03		4	
				04		3	
Fast (cmos only) input pad through clock buffer to any CLB or IOB clock input.	t_{PGCC}		3/	01		8.5	ns
				02		6.5	
				03, 04		6	
I/O clock to I/O RI input (FF)	t_{IKRI}		3/	01		11	ns
				02		5.5	
				03		4	
				04		3	
I/O clock to pad-input setup	t_{PICK}		3/	01	30		ns
				02	20		
				03	17		
				04	16		
I/O clock to pad-input hold	t_{IKPI}		3/	All	1.0		ns

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $4.5\ V \le V_{CC} \le 5.5\ V$ $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
I/O clock to pad (fast)	t_{OKPO}	See figure 4	3/	01		18	ns
				02		13	
				03		10	
				04		9	
I/O clock to pad-output setup	t_{OOK}		3/	01	15		ns
				02	10		
				03	9		
				04	8		
I/O clock to pad-output hold	t_{OKO}		3/	All	1		ns
I/O clock (high) 5/	t_{IOH}		3/	01	9		ns
				02	5		
				03	4		
				04	3		
I/O clock (low) 5/	t_{IDL}		3/	01	9		ns
				02	5		
				03	4		
				04	3		
Output (enabled fast) to pad	t_{OPF}		3/	01		15	ns
				02		9	
				03		6	
				04		5	
Output (enabled slow) to pad	t_{OPS}		3/	01		40	ns
				02		33	
				03		24	
				04		20	
Three-state to pad begin high impedance (fast)	t_{TSHZ}		3/	01		14	ns
				02		12	
				03		10	
				04		9	

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $4.5\ V \le V_{CC} \le 5.5\ V$ $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Three-state to pad end high impedance (fast)	t_{TSON}	See figure 4	3/	01		20	ns
				02		14	
				03		12	
				04		11	
Master $\overline{RESET}$ to input RI	t_{RRI}		3/	01		35	ns
				02		23	
				03, 04		20	
Master $\overline{RESET}$ to output (FF)	t_{RPO}		3/	01		50	ns
				02		33	
				03		28	
				04		26	
Bidirectional buffer delay	t_{BIDI}		3/	01		4	ns
				02		2	
				03		1.8	
				04		1.7	
TBUF data input to output	t_{IO}		3/	01		8	ns
				02		5	
				03		4.7	
				04		4.5	
TBUF three-state to output active and valid (single pull-up)	t_{ON}		3/	All		14	ns
double pull-up						15	
TBUF three-state to output inactive (single pull-up)	t_{PUS}		3/	01		34	ns
				02, 03		22	
				04		17	

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $4.5\ V \le V_{CC} \le 5.5\ V$ $-55°C \le T_C \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
TBUF three-state to output inactive (pair of pull-up)	t_{PUF}	See figure 4	3/	01		17	ns
				02,03,04		11	

1/ Tested initially and after any design or process change that may affect this parameter and guaranteed to the limits specified in table I with the following conditions:

Global clock at 16MHz for device 01, and 25 MHz for devices 02, 03, and 04.
5 outputs at 5 MHz
15 outputs at 1 MHz
Alternate clock at 10 MHz
20 configurable logic blocks (CLB) at 5 MHz
30 CLBs at 1 MHz
10 horizontal long lines at 5 MHz
10 vertical long lines at 1 MHz
15 inputs at 5 MHz
3 inputs at 10 MHz

Excessive supply current can occur as a result of internal contention during the initial phase of a reconfiguration following a short interruption of Vcc. To avoid this excessive current, monitor the dropping of Vcc and immediately initiate a reconfiguration, but hold RESET active. This clears the internal configuration register in less than a millisecond, and avoids all later contentions.

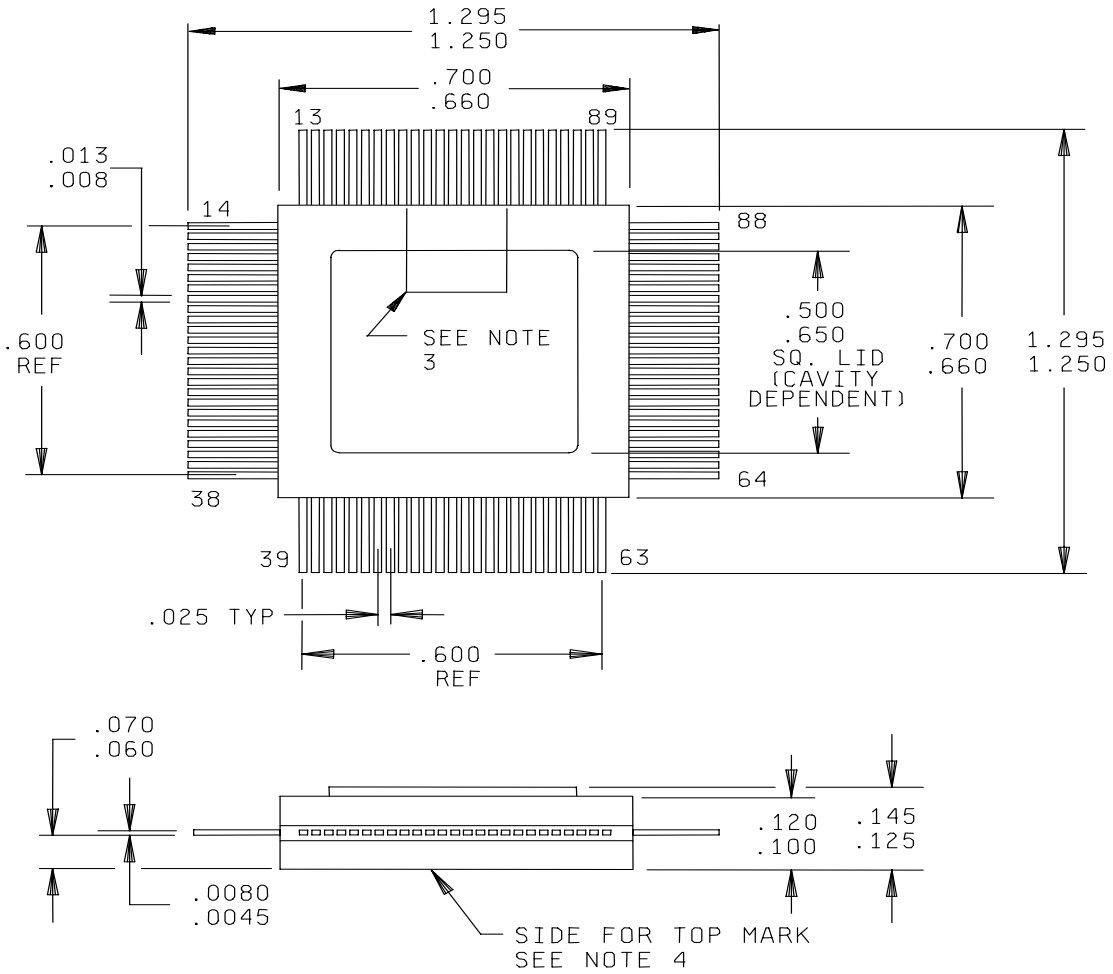
2/ $\overline{\text{PWRDWN}}$ transitions must occur during operational V_{CC} levels.

3/ Parameter is not directly tested. Devices are first 100 percent functionally tested. Benchmark patterns (t_{B1-9}) are then used to determine the compliance of this parameter. Characterization data is taken initially and after any design or process change which may affect this parameter.

4/ Minimum CLOCK widths for the auxiliary buffer are 1.25 times the t_{CH} and t_{CL}.

5/ These parameters are for clock pulses internal to the chip. Externally applied clock, increases value by 20 percent.

Case Y



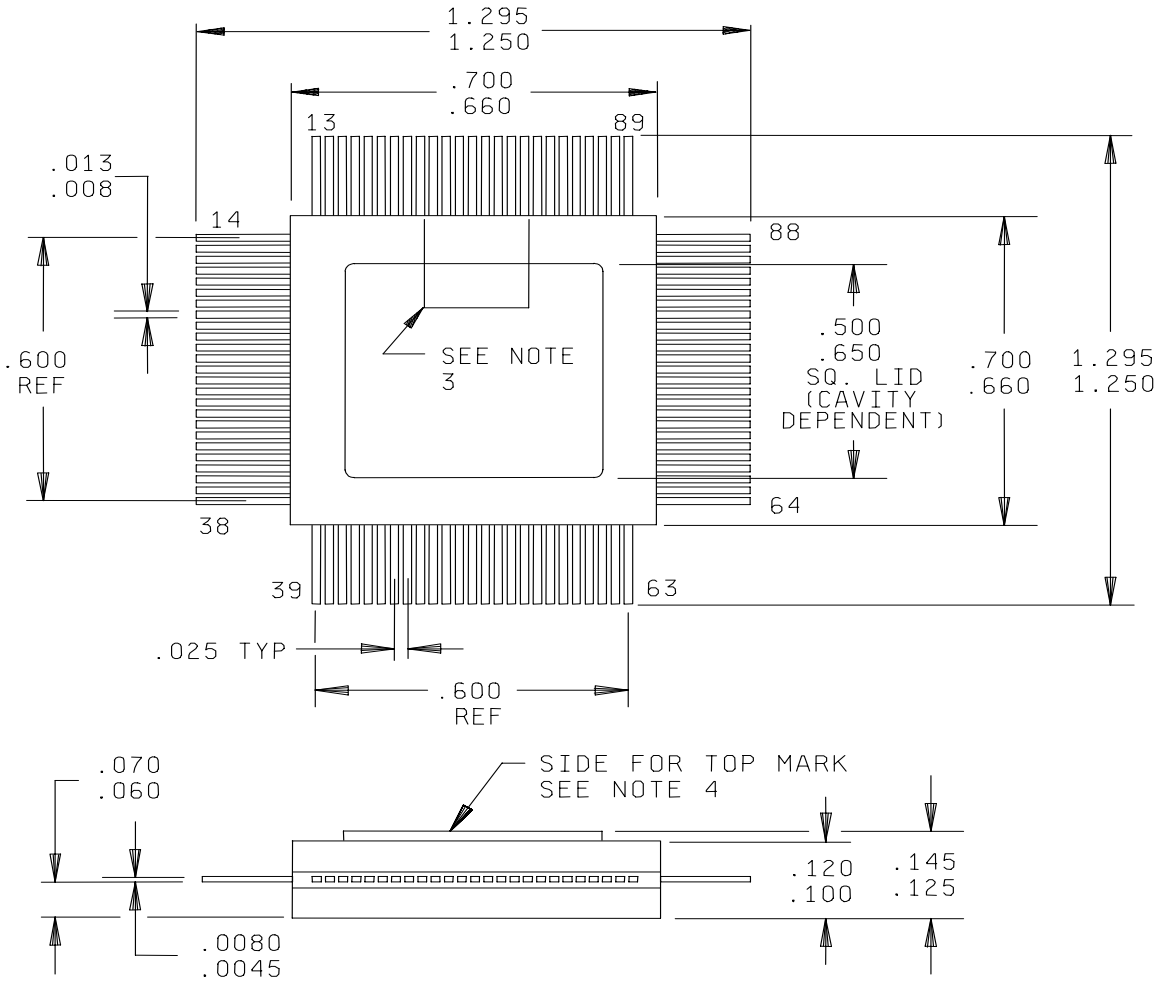
Inches	mm	Inches	mm
.0045	0.114	.125	3.18
.008	0.20	.145	3.68
.013	0.33	.500	12.70
.025	0.64	.600	15.24
.060	1.52	.650	16.51
.070	1.78	.660	16.76
.100	2.54	.700	17.78
.120	3.05	1.250	31.75
		1.295	32.89

NOTES:

1. Dimensions are in inches.
2. The US government preferred system of measurement is the metric SI system. However, this item was originally designed using inch-pound units of measurement. In the event of conflict between the metric and inch-pound units, the inch-pound units shall take precedence.
3. Pin 1 identifier location. Pin 1 is the middle pin on the side with center justified identifier mark. May be a notch, dot, or triangle.
4. Top side mark location, product mark is located on the nonlid side of package; i.e., lid side facing down. When mounted in this position, the pin out is clockwise.

FIGURE 1. Case outline.

Case T



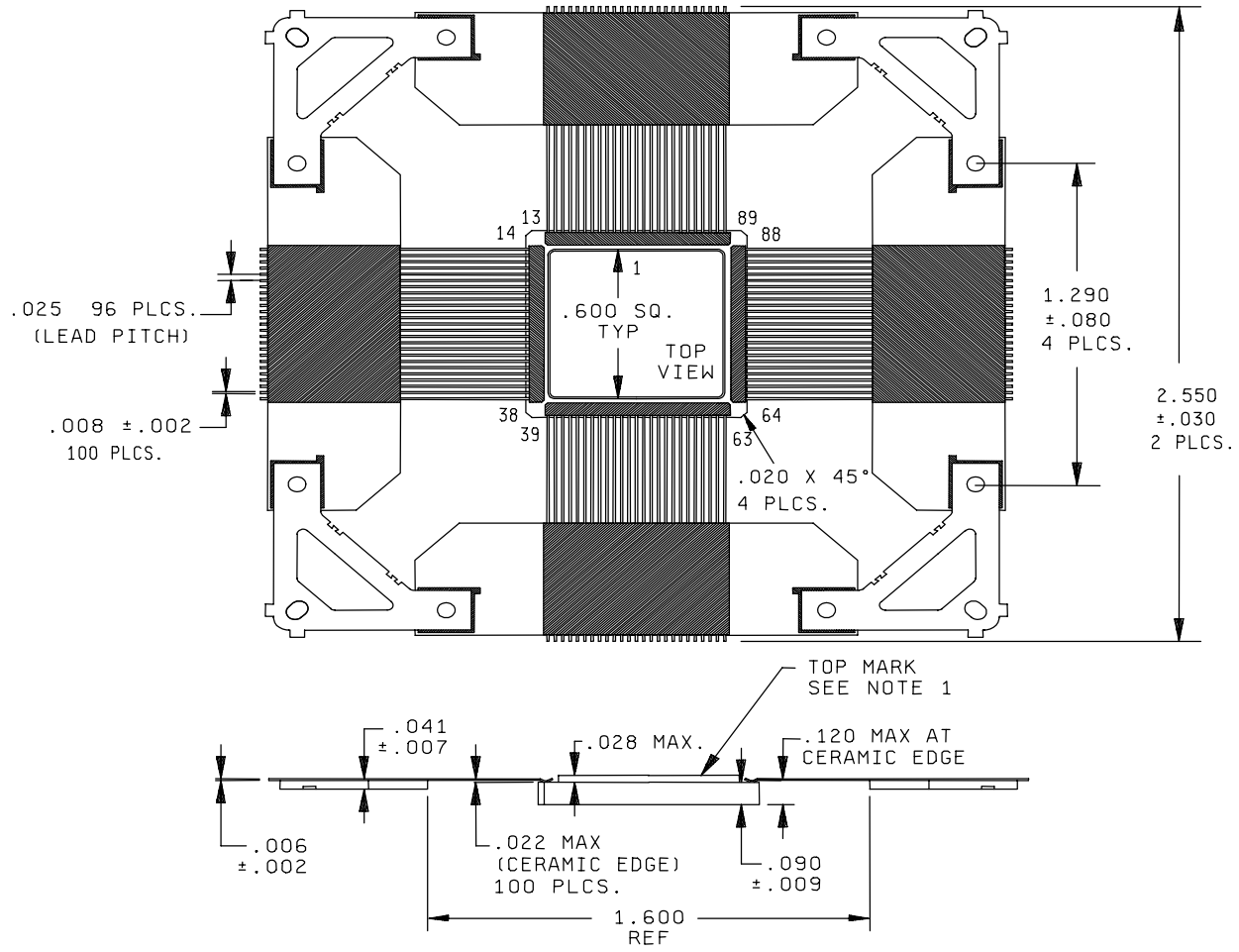
Inches	mm	Inches	mm
.0045	0.114	.125	3.18
.008	0.20	.145	3.68
.013	0.33	.500	12.70
.025	0.64	.600	15.24
.060	1.52	.650	16.51
.070	1.78	.660	16.76
.100	2.54	.700	17.78
.120	3.05	1.250	31.75
		1.295	32.89

NOTES:

1. Dimensions are in inches.
2. The US government preferred system of measurement is the metric SI system. However, this item was originally designed using inch-pound units of measurement. In the event of conflict between the metric and inch-pound units, the inch-pound units shall take precedence.
3. Pin 1 identifier location. Pin 1 is the middle pin on the side with center justified identifier mark. May be a notch, dot, or triangle.
4. Top side mark location, product mark is located on the lid side of package; i.e., lid side facing up. When mounted in this position, the pin out is counterclockwise

FIGURE 1. Case outline - Continued.

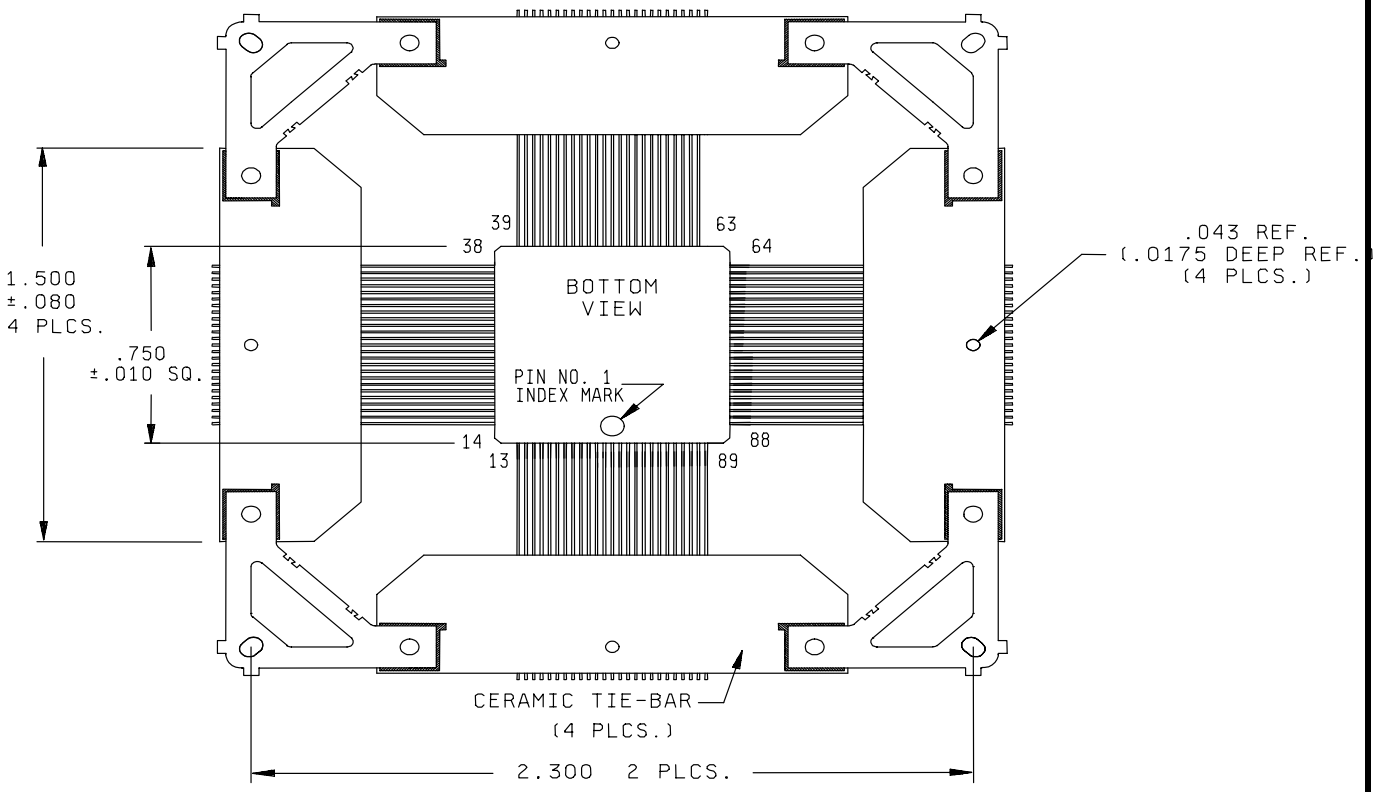
Case M



NOTES:

1. Top side mark location, product mark is located on the lid side of package; i.e., lid side facing up. When mounted in this position, the pin out is counterclockwise.
2. Dimensions are in inches.
3. The US government preferred system of measurement is the metric SI system. However, this item was originally designed using inch-pound units of measurement. In the event of conflict between the metric and inch-pound units, the inch-pound units shall take precedence.
4. Pin 1 identifier location. Pin 1 is the middle pin on the side with center justified identifier mark. May be a notch, dot, or triangle.
5. The leads of this package style shall be protected from mechanical distortion and damage such that dimensions pertaining to relative lead/body "true positions" and lead "coplanarity" are always maintained until the next higher level package attachment process is complete. Package lead protection mechanisms (tie bars) are shown on the drawing for reference only. When microcircuit devices contained in this package style are shipped for use in Government equipment, or shipped directly to the Government as spare parts or mechanical qualification samples, lead "true position" and "coplanarity" protection shall be in place.

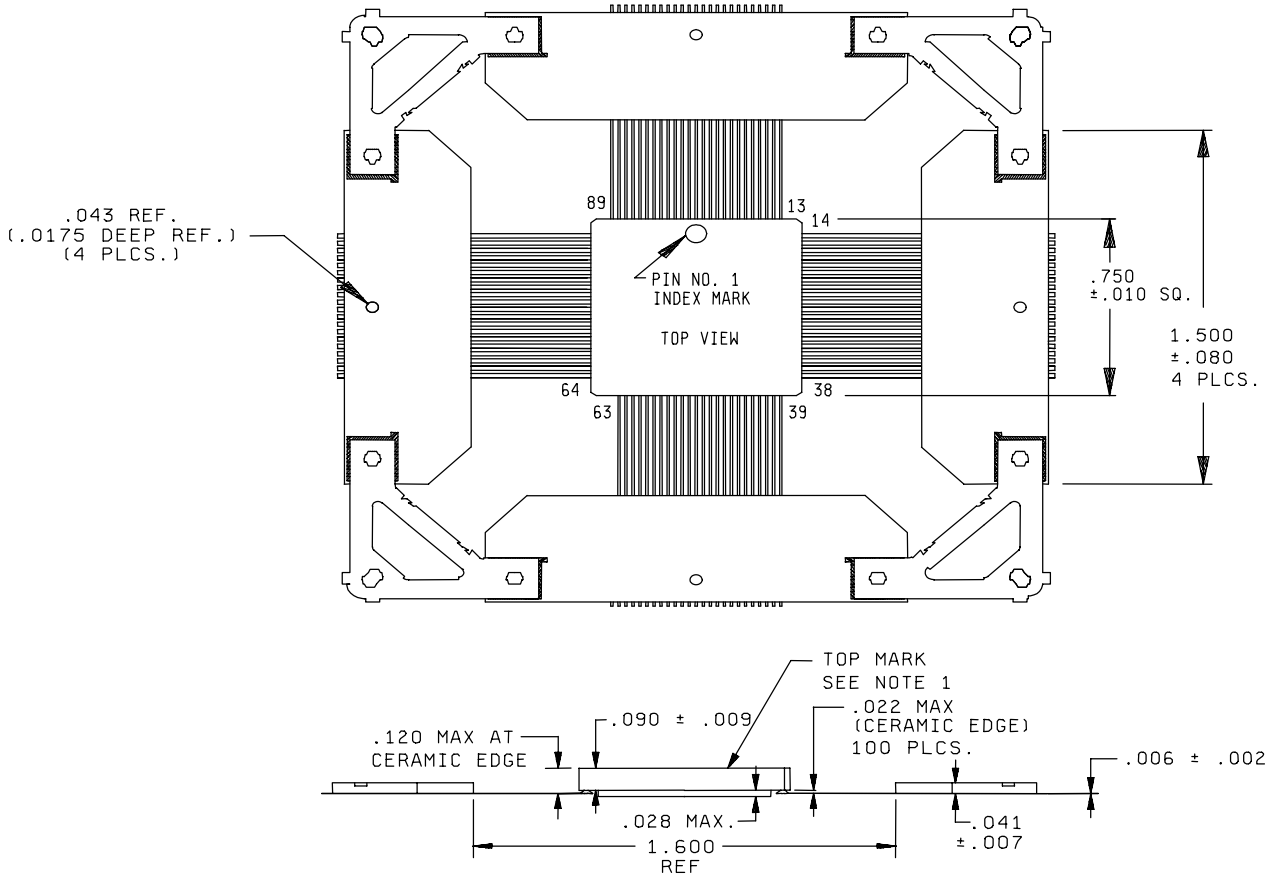
FIGURE 1. Case outline -Continued.



Inches	mm	Inches	mm
.002	0.05	.025	0.64
.006	0.15	.028	0.71
.008	0.20	.030	0.76
.009	0.23	.090	2.29
.010	0.25	.120	3.05
.020	0.51	.600	15.24
.022	0.56	.750	19.05
		2.550	64.77

FIGURE 1. Case outline - Continued.

Case N

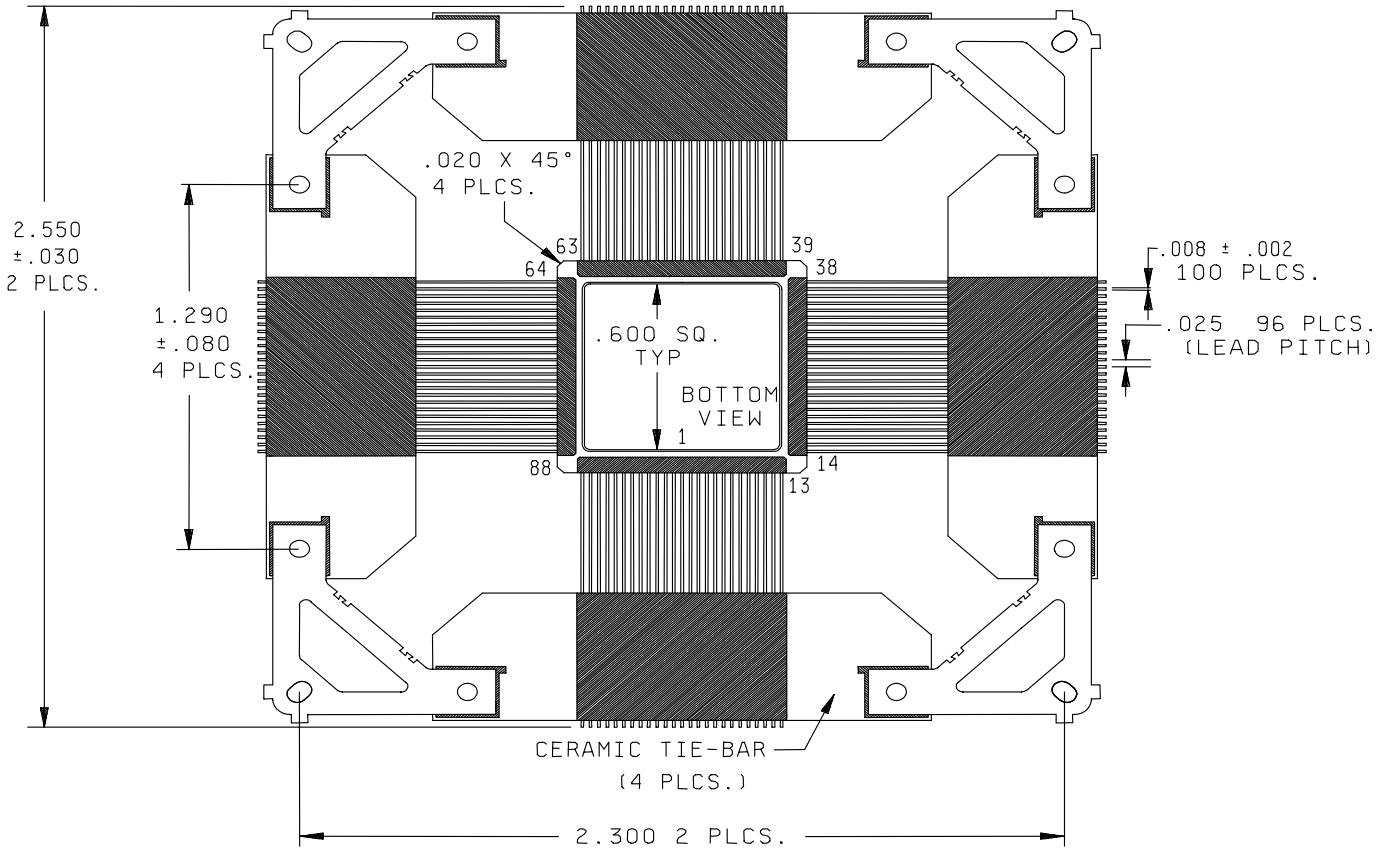


NOTES:

1. Top side mark location, product mark is located on the lid side of package; i.e., lid side facing up. When mounted in this position, the pin out is counterclockwise.
2. Dimensions are in inches.
3. The US government preferred system of measurement is the metric SI system. However, this item was originally designed using inch-pound units of measurement. In the event of conflict between the metric and inch-pound units, the inch-pound units shall take precedence.
4. Pin 1 identifier location. Pin 1 is the middle pin on the side with center justified identifier mark. May be a notch, dot, or triangle.
5. The leads of this package style shall be protected from mechanical distortion and damage such that dimensions pertaining to relative lead/body "true positions" and lead "coplanarity" are always maintained until the next higher level package attachment process is complete. Package lead protection mechanisms (tie bars) are shown on the drawing for reference only. When microcircuit devices contained in this package style are shipped for use in Government equipment, or shipped directly to the Government as spare parts or mechanical qualification samples, lead "true position" and "coplanarity" protection shall be in place.

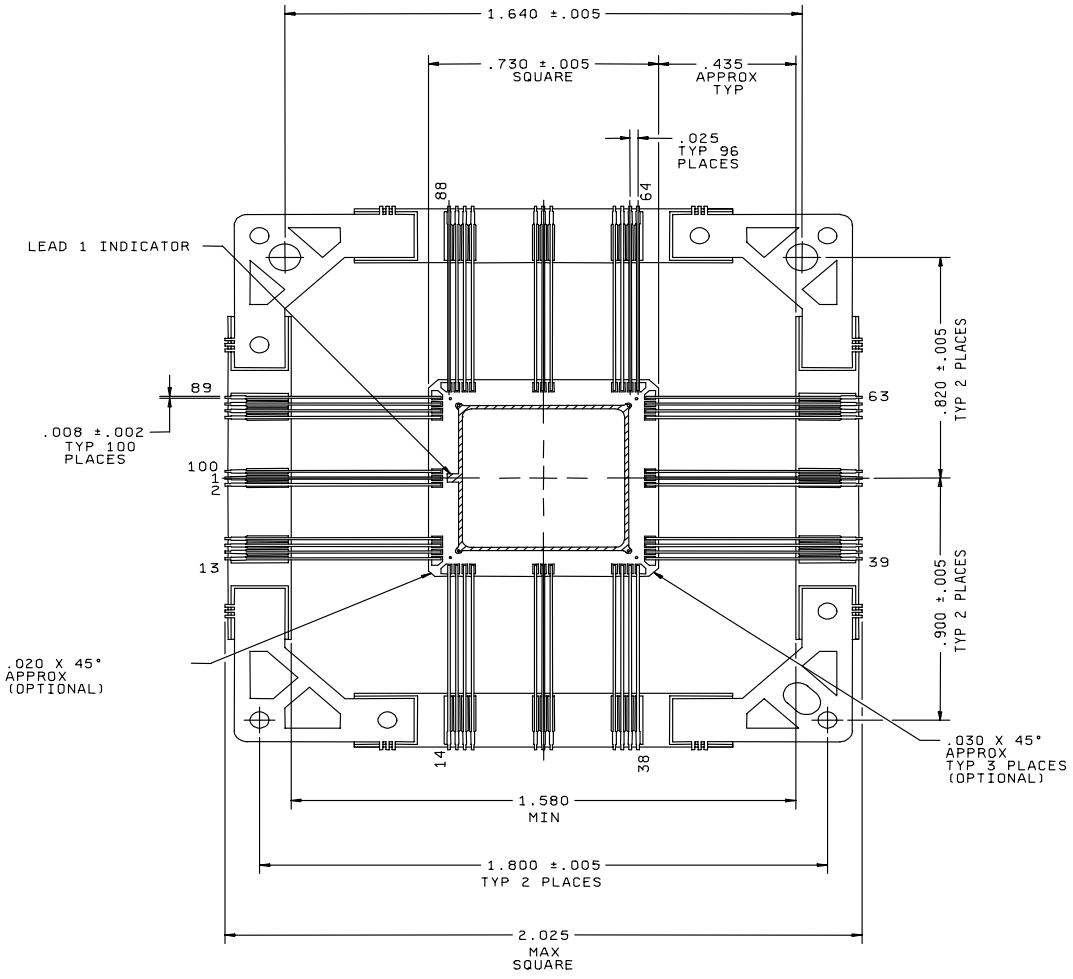
FIGURE 1. Case outline - Continued.

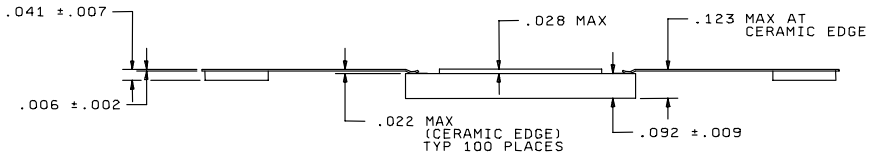
Case N - Continued.



Inches	mm	Inches	mm
.002	0.05	.025	0.64
.006	0.15	.028	0.71
.008	0.20	.030	0.76
.009	0.23	.090	2.29
.010	0.25	.120	3.05
.020	0.51	.600	15.24
.022	0.56	.750	19.05
		2.550	64.77

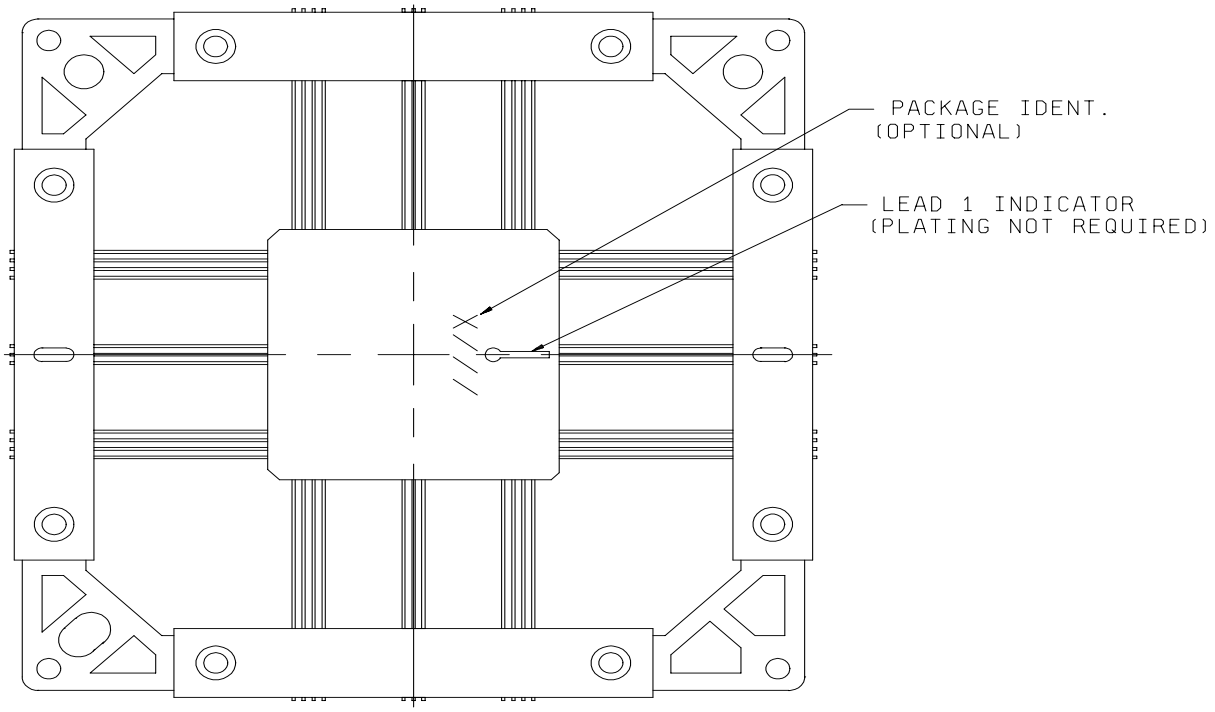
FIGURE 1. Case outline - Continued.





Inches	mm	Inches	mm
.002	.05	.041	1.04
.005	.13	.092	2.34
.006	.15	.123	3.12
.007	.18	.435	11.05
.008	.20	.730	18.54
.020	.51	.820	20.83
.022	.56	.900	22.86
.025	.64	1.580	40.13
.028	.71	1.640	41.68
.030	.76	1.800	45.72
		2.025	51.44

FIGURE 1. Case outline - Continued.



NOTES:

1. Dimensions are in inches.
2. The US government preferred system of measurement is the metric SI system. However, this item was originally designed using inch-pound units of measurement. In the event of conflict between the metric and inch-pound units, the inch-pound units shall take precedence.
3. Pin 1 identifier location. Pin 1 is the middle pin on the side with center justified identifier mark. May be a notch, dot, or triangle or other metallized feature.
4. Top side mark location, product mark is located on the lid side of package; i.e., lid side facing up. When mounted in this position, the pin out is counterclockwise.
5. The leads of this package style shall be protected from mechanical distortion and damage such that dimensions pertaining to relative lead/body "true positions" and lead "coplanarity" are always maintained until the next higher level package attachment process is complete. Package lead protection mechanisms (tie bars) are shown on the drawing for reference only. When microcircuit devices contained in this package style are shipped for use in Government equipment, or shipped directly to the Government as spare parts or mechanical qualification samples, lead "true position" and "coplanarity" protection shall be in place.

FIGURE 1. Case outline - Continued.

Case outline X and Z

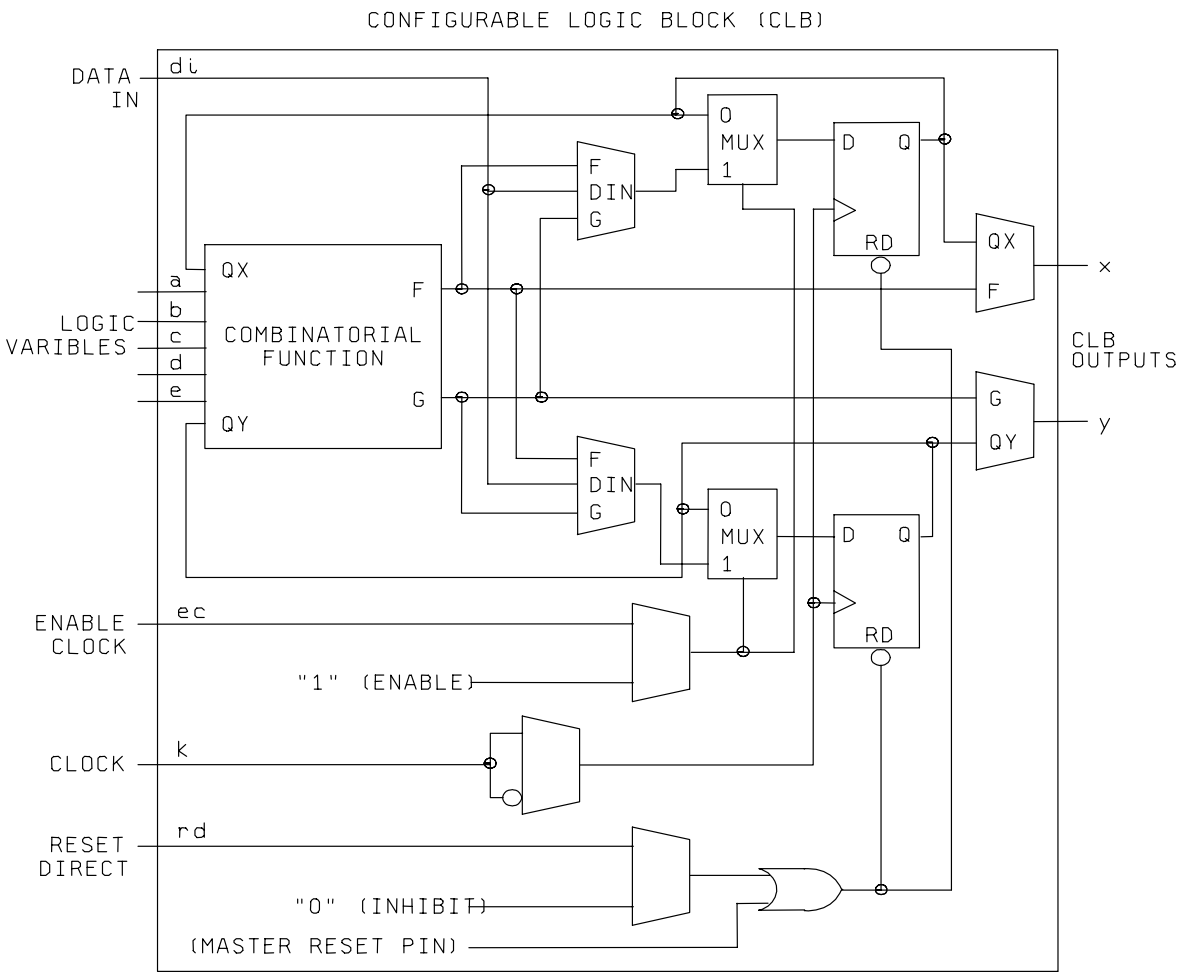
Devices types	All	Devices types	All	Devices types	All
Terminal number	Terminal symbol	Terminal number	Terminal symbol	Terminal number	Terminal symbol
A1	A9-I/0	C10	DOUT-I/O	J1	I/O
A2	A8-I/0	C11	$\overline{\text{RCLK}}$ -I/O	J2	M1-$\overline{\text{RDATA}}$
A3	A11-I/O	D1	I/O	J5	I/O
A4	I/O	D2	I/O	J6	GND
A5	A6-I/O	D10	$\overline{\text{WRT}}$ -D1-I/O	J7	I/O
A6	A13-I/O	D11	NC	J10	DONE-$\overline{\text{PG}}$
A7	A14-I/O	E1	I/O	J11	XTL1-I/O-BCLKIN
A8	NC	E2	I/O	K1	I/O
A9	A3-I/O	E3	I/O	K2	M2-I/O
A10	A2-I/O	E9	I/O	K3	HDC-I/O
A11	CCLK	E10	D2-I/O	K4	I/O
B1	NC	E11	$\overline{\text{CS1}}$ -I/O	K5	I/O
B2	$\overline{\text{PWRDWN}}$	F1	I/O	K6	INIT-I/O
B3	A10-I/O	F2	I/O	K7	I/O
B4	NC	F3	V_{CC}	K8	I/O
B5	A12-I/O	F9	V_{CC}	K9	I/O
B6	A15-I/O	F10	D5-I/O	K10	MASTER $\overline{\text{RESET}}$
B7	A4-I/O	F11	D3-I/O	K11	D7-I/O
B8	NC	G1	I/O	L1	MO-RTRIG
B9	CS2-A1-I/O	G2	I/O	L2	I/O
B10	$\overline{\text{WS}}$ -A0-I/O	G3	I/O	L3	LDC-I/O
B11	DIN-DO-I/O	G9	I/O	L4	NC
C1	I/O	G10	$\overline{\text{CS0}}$ -I/O	L5	NC
C2	TCLKIN-I/O	G11	D4-I/O	L6	I/O
C3	INDEX PIN	H1	I/O	L7	I/O
C5	A7-I/O	H2	I/O	L8	I/O
C6	GND	H10	D6-I/O	L9	NC
C7	A5-I/O	H11	I/O	L10	NC
				L11	XT2-I/O

FIGURE 2. Terminal connections.

Case outline Y, U, T, M, N, AND 9

Device types	All	Device types	All	Device types	All
Terminal number	Terminal symbol	Terminal number	Terminal symbol	Terminal number	Terminal symbol
1	GND	35	NC	68	D6-I/O
2	A13	36	NC	69	NC
3	A6	37	M1-$\overline{\text{RDATA}}$	70	NC
4	A12	38	NC	71	I/O
5	A7	39	MO-RTRIG	72	D5-I/O
6	NC	40	NC	73	$\overline{\text{CS0}}$
7	NC	41	M2	74	D4-I/O
8	A11	42	HDC	75	I/O
9	A8	43	I/O	76	V_{CC}
10	A10	44	$\overline{\text{LDC}}$	77	D3-I/O
11	A9	45	NC	78	$\overline{\text{CS1}}$
12	NC	46	NC	79	D2-I/O
13	NC	47	I/O	80	I/O
14	$\overline{\text{PWRDWN}}$	48	I/O	81	NC
15	TCLKIN-I/O	49	I/O	82	NC
16	NC	50	$\overline{\text{INIT}}$	83	D1-I/O
17	NC	51	GND	84	$\overline{\text{RCLK}}$ -RDY/$\overline{\text{BUSY}}$
18	NC	52	I/O	85	DIN-DO-I/O
19	I/O	53	I/O	86	DOUT-I/O
20	I/O	54	I/O	87	CCLK
21	I/O	55	I/O	88	NC
22	I/O	56	I/O	89	NC
23	I/O	57	I/O	90	$\overline{\text{WS}}$ -A0
24	I/O	58	I/O	91	CS2-A1
25	I/O	59	NC	92	NC
26	V_{CC}	60	NC	93	A2
27	I/O	61	XTL2-I/O	9	A3
28	I/O	62	NC	95	NC
29	I/O	63	$\overline{\text{RESET}}$	96	NC
30	I/O	64	NC	97	A15
31	I/O	65	DONE-$\overline{\text{PG}}$	98	A4
32	I/O	66	D7-I/O	99	A14
33	I/O	67	BCLKIN-XTL1-I/O	100	A5
34	I/O				

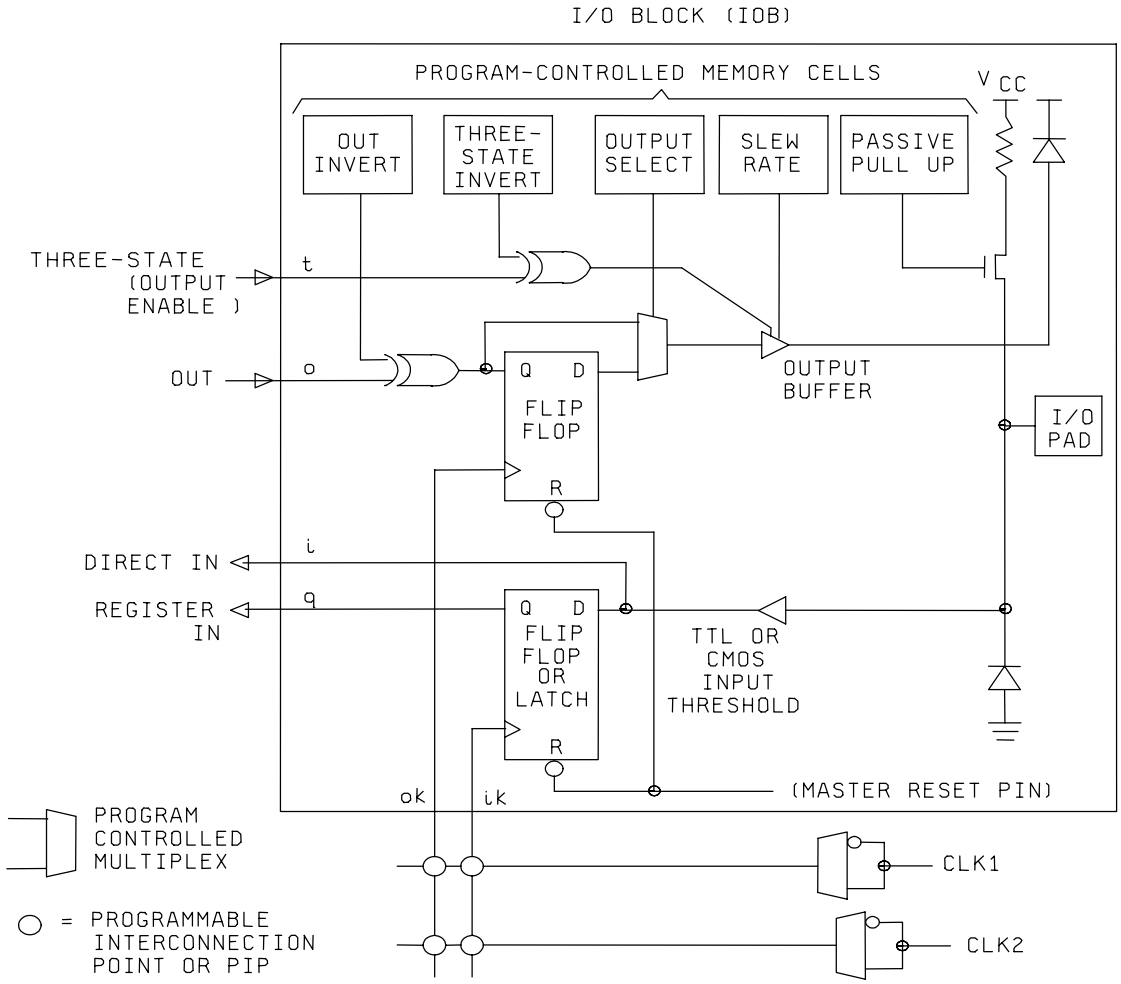
FIGURE 2. Terminal connections - Continued.



NOTE: Each CLB includes a combinatorial logic section, two flip-flops, and a program memory controlled multiplexer selection of function.

It has: Five logic variable inputs: a, b, c, d, and e
A direct data input: di
An enable clock: ec
A clock (invertible): k
An asynchronous reset: rd
Two outputs: x and y

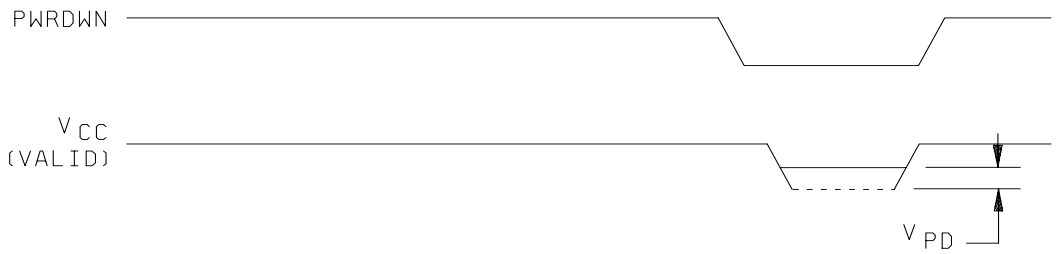
FIGURE 3. Logic block diagrams.



NOTE: The IOB includes input and output storage elements and I/O options selected by configuration memory cells. A choice of two clocks is available on each die edge. The polarity of each clock line (not each flip-flop or latch) is programmable. A clock line that triggers the flip-flop on the rising edge is an active low latch enable (latch transparent) signal and vice versa. Passive pull-up can only be enabled on inputs, not on outputs. All user inputs are programmed for TTL or CMOS thresholds.

FIGURE 3. Logic block diagrams - Continued.

GENERAL LOGIC CELL ARRAY (LCA) SWITCHING CHARACTERISTICS



NOTE: All timings except t_{TSHZ} and t_{TSON} are measured at 1.5 V levels with 50 pF minimum output load. For input signals, rise and fall times are less than 6.0 ns, with low amplitude = 0 V, and high amplitude = 3.0 V.

FIGURE 4. Timing diagrams and switching characteristics.

CONFIGURABLE LOGIC BLOCK (CLB) SWITCHING CHARACTERISTICS

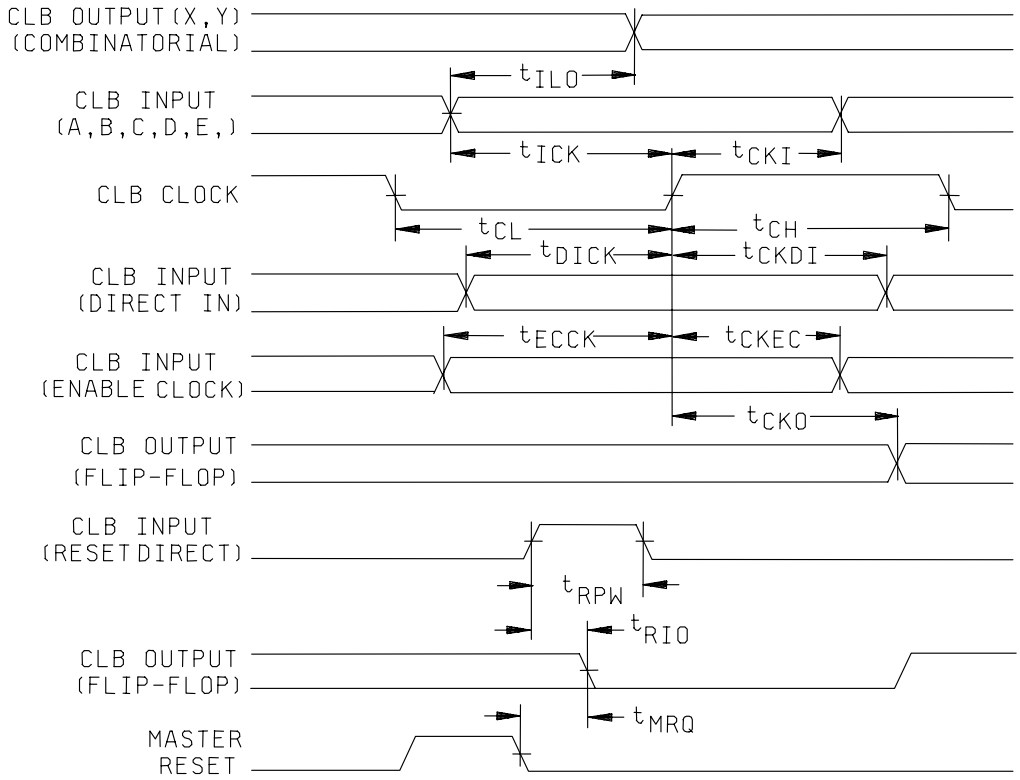
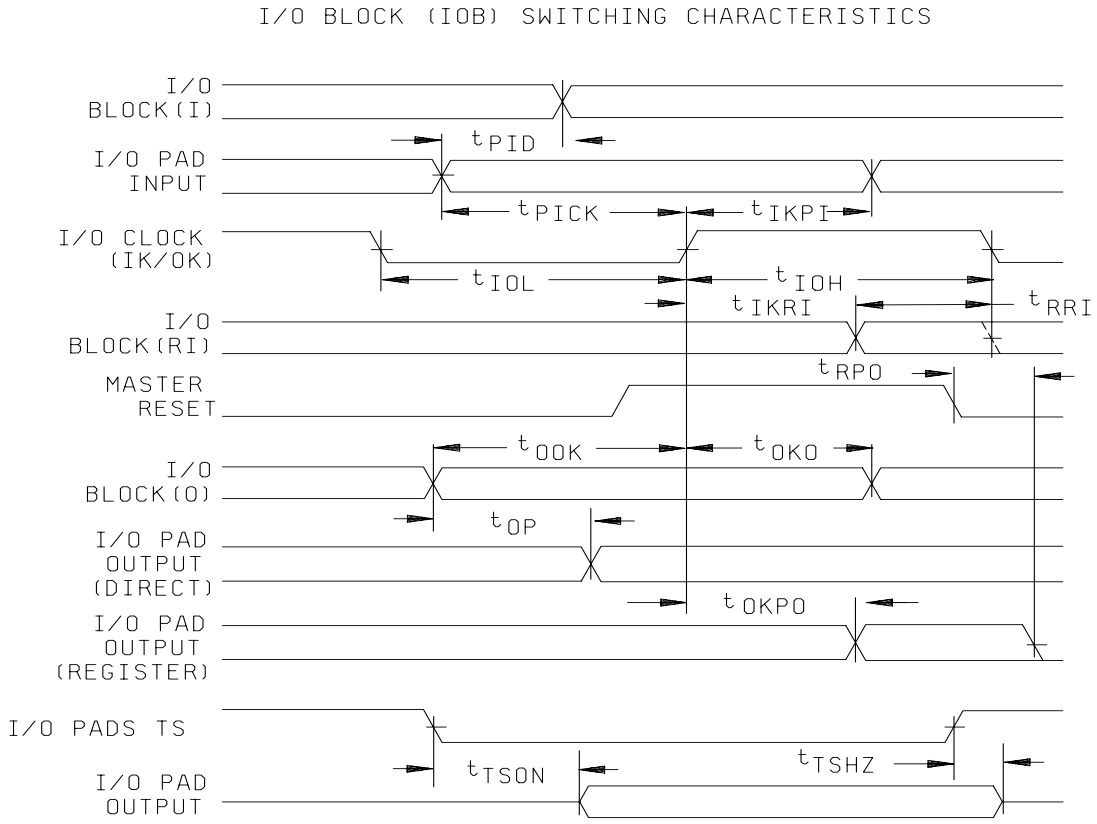
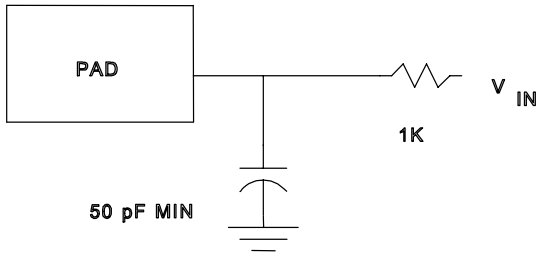


FIGURE 4. Timing diagrams and switching characteristics - Continued.

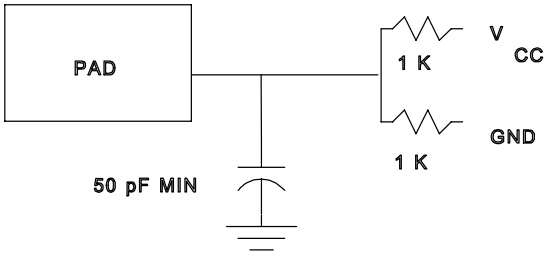


NOTE: t_{TSHZ} is determined when the output shifts 10 percent (of the output voltage swing) from V_{OL} level or V_{OH} level. See figure 5, circuit B herein for circuit used. t_{TSON} is measured at 0.5 V_{CC} level with V_{IN} = 0.0 V for three-state to active High, and V_{IN} = V_{CC} for three-state to active low. See figure 5, circuit A herein for circuit used.

FIGURE 4. Timing diagrams and switching characteristics - Continued.



Circuit A



Circuit B

FIGURE 5. Load circuits.

4.3 Qualification inspection for device classes Q and V. Qualification inspection for device classes Q and V shall be in accordance with MIL-PRF-38535. Inspections to be performed shall be those specified in MIL-PRF-38535 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

4.4 Conformance inspection. Technology conformance inspection for classes Q and V shall be in accordance with MIL-PRF-38535 including groups A, B, C, D, and E inspections and as specified herein. Quality conformance inspection for device class M shall be in accordance with MIL-PRF-38535, appendix A and as specified herein. Inspections to be performed for device class M shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection.

a. Tests shall be as specified in table IIA herein.

b. Subgroups 5 and 6 of table I of method 5005 of MIL-STD-883 shall be omitted.

c. For device class M, subgroups 7 and 8 tests shall be sufficient to verify the truth table. For device classes Q and V, subgroups 7 and 8 shall include verifying the functionality of the device; these tests shall have been fault graded in accordance with MIL-STD-883, test method 5012 (see 1.5 herein).

d. O/V (latch-up) tests shall be measured only for initial qualification and after any design or process changes which may affect the performance of the device. For device class M, procedures and circuits shall be maintained under document revision level control by the manufacturer and shall be made available to the preparing activity or acquiring activity upon request. For device classes Q and V, the procedures and circuits shall be under the control of the device manufacturer's TRB in accordance with MIL-PRF-38535 and shall be made available to the preparing activity or acquiring activity upon request. Testing shall be on all pins, on five devices with zero failures. Latch-up test shall be considered destructive. Information contained in JESD 78 may be used for reference.

e. Subgroup 4 (C_{IN} and C_{OUT} measurements) shall be measured only for initial qualification and after any process or design changes which may affect input or output capacitance. Capacitance shall be measured between the designated terminal and GND at a frequency of 1 MHz. Sample size is five devices with no failures, and all input and output terminals tested.

4.4.2 Group C inspection. The group C inspection end-point electrical parameters shall be as specified in table IIA herein.

4.4.2.1 Additional criteria for device class M. Steady-state life test conditions, method 1005 of MIL-STD-883:

a. Test condition D. The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing or acquiring activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

b. T_A = +125°C, minimum.

c. Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

TABLE IIA. Electrical test requirements. 1/ 2/ 3/ 4/ 5/ 6/ 7/

Line no.	Test requirements	Subgroups (in accordance with MIL-STD-883, method 5005, table I)	Subgoup in accordance with MIL-PRF-38535, table III)	
		Device class M	Device class Q	Device class V
1	Interim electrical parameters (see 4.2)		1, 7, 9	1, 7, 9
2	Static burn-in (method 1015)	Required	Required	Required
3	Same as line 1			1*, 7* Δ
4	Dynamic burn-in (method 1015)	Not required	Not required	Not required
5	Final electrical parameters	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11
6	Group A tests requirements	1, 2, 3, 4**, 7*, 8A, 8B, 9, 10, 11	1, 2, 3, 4**, 7*, 8A, 8B, 9, 10, 11	1, 2, 3, 4**, 7*, 8A, 8B, 9, 10, 11
7	Group C end-point electrical parameters	2, 3, 7, 8A, 8B	1, 2, 3, 7, 8A, 8B	1, 2, 3, 7, 8A, 8B, 9, 10, 11 Δ
8	Group D end-point electrical parameters	2, 3, 8A, 8B	2, 3, 8A, 8B	2, 3, 8A, 8B
9	Group E end-point electrical parameters	1, 7, 9	1, 7, 9	1, 7, 9

1/ Blank spaces indicate tests are not applicable.
2/ Any or all subgroups may be combined when using high-speed testers.
3/ Subgroups 7 and 8 functional tests shall verify the truth table.
4/ * indicates PDA applies to subgroup 1 and 7.
5/ ** see 4.4.1e.
6/ Δ indicates delta limit (see table IIB) shall be required where specified, and the delta values shall be computed with reference to the previous interim electrical parameters (see line 1).
7/ See 4.4.1d.

TABLE IIB. Delta limits at +25°C.

Parameter 1/	Device types
	All
I_{CCO} standby	± 300 µA
I_{IL}, I_{OL}	± 2 nA

1/ The above parameter shall be recorded before and after the required burn-in and life tests to determine the delta Δ

4.4.2.2 Additional criteria for device classes Q and V. The steady-state life test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The test circuit shall be maintained under document revision level control by the device manufacturer's TRB in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

4.4.3 Group D inspection. The group D inspection end-point electrical parameters shall be as specified in table II herein.

4.4.4 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.5 herein).

a. End-point electrical parameters shall be as specified in table IIA herein.

b. For device classes Q and V, the devices or test vehicle shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535 for the RHA level being tested. For device class M, the devices shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535, appendix A for the RHA level being tested. All device classes must meet the postirradiation end-point electrical parameter limits as defined in table I at T_A = +25°C ±5°C, after exposure, to the subgroups specified in table IIA herein.

c. When specified in the purchase order or contract, a copy of the RHA delta limits shall be supplied.

4.5 Delta measurements for device classes Q and V. Delta measurements, as specified in table IIA, shall be made and recorded before and after the required burn-in screens and steady-state life tests to determine delta compliance. The electrical parameters to be measured, with associated delta limits are listed in table IIB. The device manufacturer may, at his option, either perform delta measurements or within 24 hours after life test perform final electrical parameter tests, subgroups 1, 7, and 9.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use for Government microcircuit applications (original equipment), design applications, and logistics purposes.

6.1.1 Replaceability. Microcircuits covered by this drawing will replace the same generic device covered by a contractor prepared specification or drawing.

6.1.2 Substitutability. Device class Q devices will replace device class M devices.

6.2 Configuration control of SMD's. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished using DD Form 1692, Engineering Change Proposal.

6.3 Record of users. Military and industrial users should inform Defense Supply Center Columbus when a system application requires configuration control and which SMD's are applicable to that system. DSCC will maintain a record of users and this list will be used for coordination and distribution of changes to the drawings. Users of drawings covering microelectronic devices (FSC 5962) should contact DSCC-VA, telephone (614) 692-0544.

6.4 Comments. Comments on this drawing should be directed to DSCC-VA , Columbus, Ohio 43216-5000, or telephone (614) 692-0647.

6.5 Symbols, definitions, and functional descriptions.

PWRDWN	POWER-DOWN.
MO	MODE 0.
RTRIG	READ TRIGGER.
M1	MODE 1.
RDATA	READ DATA.
M2	MODE 2.
HDC	HIGH DURING CONFIGURATION.
LDC	LOW DURING CONFIGURATION
RESET	RESET
DONE	DONE
PG	PROGRAM
BCLKIN	BCLKIN
XTL1	EXTERNAL CRYSTAL
XTL2	EXTERNAL CRYSTAL
CCLK	CONFIGURATION CLOCK
DOUT	DATA OUT
DIN	DATA IN
CSO	CHIP SELECT, WRITE.
CS1	CHIP SELECT, WRITE.
CS2	CHIP SELECT, WRITE.
WS	CHIP SELECT, WRITE.
RCLK	READ CLOCK.
RDY/BUSY	During peripheral parallel mode configuration, this pin indicates when the chip is ready for another byte of data to be written into it. After configuration is complete, this pin becomes a user programmed I/O pin.
TCLKIN	TCLKIN
INIT	INIT
D0-D7	DATA
A0-A15	ADDRESS
I/O	INPUT/OUTPUT(DEDICATED).
V_{CC}	+5.0 V SUPPLY VOLTAGE.
GND	GROUND

6.6 Additional operating data.

a. Power on delay is 2^{14} cycles from the non-master mode. This provides 11 to 33 ms of wait time.

b. Power on delay is 2^{16} cycles for the master mode. This provides 43 to 130 ms of wait time.

c. Clear is 375 cycles ±25 cycles and may take as long as 250 to 750 μs.

d. During normal power up, V_{CC} must rise from 2.0 V to V_{CC} minimum in less than 10 ms. If this does not occur, configuration must be delayed by using RESET.

6.7 Sources of supply.

6.7.1 Sources of supply for device classes Q and V. Sources of supply for device classes Q and V are listed in QML-38535. The vendors listed in QML-38535 have submitted a certificate of compliance (see 3.6 herein) to DSCC-VA and have agreed to this drawing.

6.7.2 Approved sources of supply for device class M. Approved sources of supply for class M are listed in MIL-HDBK-103. The vendors listed in MIL-HDBK-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DSCC-VA.

APPENDIX

10. SCOPE

10.1 Scope. This appendix contains the PIN substitution information to support the one part-one part number system. SMD 5962-89948XXM supersedes SMD 5962-89948. For new designs, after the date of this document the NEW PIN shall be used in lieu of the OLD PIN. For exsisting designs prior to the date of this document the NEW PIN can be used in lieu of the OLD PIN. This appendix is a mandatory part of the specification. The information contained herein is intended for compliance. The PIN substitution data shall be as follows.

20. APPLICABLE DOCUMENTS This section is not applicable to this appendix.

30. SUBSTITUTION DATA

New PIN	Old PIN
5962-8994801MXX	5962-8994801XX
5962-8994801MYX	5962-8994801YX
5962-8994801MZX	not originally available
5962-8994801MUX	not originally available
5962-8994801MTX	not originally available
5962-8994801MMX	not originally available
5962-8994801MNX	not originally available
5962-8994801M9X	not originally available
5962-8994802MXX	5962-8994802XX
5962-8994802MYX	5962-8994802YX
5962-8994802MZX	not originally available
5962-8994802MUX	not originally available
5962-8994802MTX	not originally available
5962-8994802MMX	not originally available
5962-8994802MNX	not originally available
5962-8994802M9X	not originally available
5962-8994803MXX	not originally available
5962-8994803MYX	not originally available
5962-8994803MZX	not originally available
5962-8994803MUX	not originally available
5962-8994803MTX	not originally available
5962-8994803MMX	not originally available
5962-8994803MNX	not originally available
5962-8994803M9X	not originally available
5962-8994804MXX	not originally available
5962-8994804MYX	not originally available
5962-8994804MZX	not originally available
5962-8994804MUX	not originally available
5962-8994804MTX	not originally available
5962-8994804MMX	not originally available
5962-8994804MNX	not originally available
5962-8994804M9X	not originally available

STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 02-02-01

Approved sources of supply for SMD 5962-89948 are listed below for immediate acquisition information only and shall be added to MIL-HDBK-103 and QML-38535 during the next revision. MIL-HDBK-103 and QML-38535 will be revised to include the addition or deletion of sources. The vendors listed below have agreed to this drawing and a certificate of compliance has been submitted to and accepted by DSCC-VA. This bulletin is superseded by the next dated revision of MIL-HDBK-103 and QML-38535.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-8994801MXA	3/	XC3020-50PG84B
5962-8994801MYA	3/	XC3020-50CQ100B
5962-8994801MTA	3/	XC3020-50CQ100B
5962-8994801MMA	3/	XC3020-50CB100B
5962-8994801MNA	3/	XC3020-50CB100B
5962-8994802MXA	3/	XC3020-70PG84B
5962-8994802MYA	3/	XC3020-70CQ100B
5962-8994802MTA	3/	XC3020-70CQ100B
5962-8994802MMA	3/	XC3020-70CB100B
5962-8994802MNA	3/	XC3020-70CB100B
5962-8994803MXC	68994	XC3020-100PG84B
5962-8994803MYC	68994	XC3020-100CQ100B
5962-8994803MTC	68994	XC3020-100CQ100B
5962-8994803MMC	68994	XC3020-100CB100B
5962-8994803MNC	68994	XC3020-100CB100B

1/ The lead finish shown for each PIN representing a hermetic package is the most readily available from the manufacturer listed for that part. If the desired lead finish is not listed contact the vendor to determine its availability.
2/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.
3/ Not available from an approved source of supply.

Vendor CAGE number	Vendor name and address
68994	Xilinx, Incorporated 2100 Logic Drive San Jose, CA 95124

The information contained herein is disseminated for convenience only and the Government assumes no liability whatsoever for any inaccuracies in the information bulletin.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-8994801QUA	3/	ATT3020-50N100MQ
5962-8994801QZA	3/	ATT3020-50R84MQ
5962-8994801Q9A	3/	ATT3020-50N100MQ
5962-8994802QUA	3/	ATT3020-70N100MQ
5962-8994802QZA	3/	ATT3020-70R84MQ
5962-8994802Q9A	3/	ATT3020-70N100MQ
5962-8994803QUA	3/	ATT3020-100N100MQ
5962-8994803QZA	3/	ATT3020-100R84MQ
5962-8994803Q9A	3/	ATT3020-100N100MQ
5962-8994804QUA	3/	ATT3020-125N100MQ
5962-8994804QZA	3/	ATT3020-125R84MQ
5962-8994804Q9A	3/	ATT3020-125N100MQ

1/ The lead finish shown for each PIN representing a hermetic package is the most readily available from the manufacturer listed for that part. If the desired lead finish is not listed contact the vendor to determine its availability.
2/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.
3/ Not available from an approved source of supply.

Vendor CAGE number	Vendor name and address
68994	Xilinx, Incorporated 2100 Logic Drive San Jose, CA 95124